

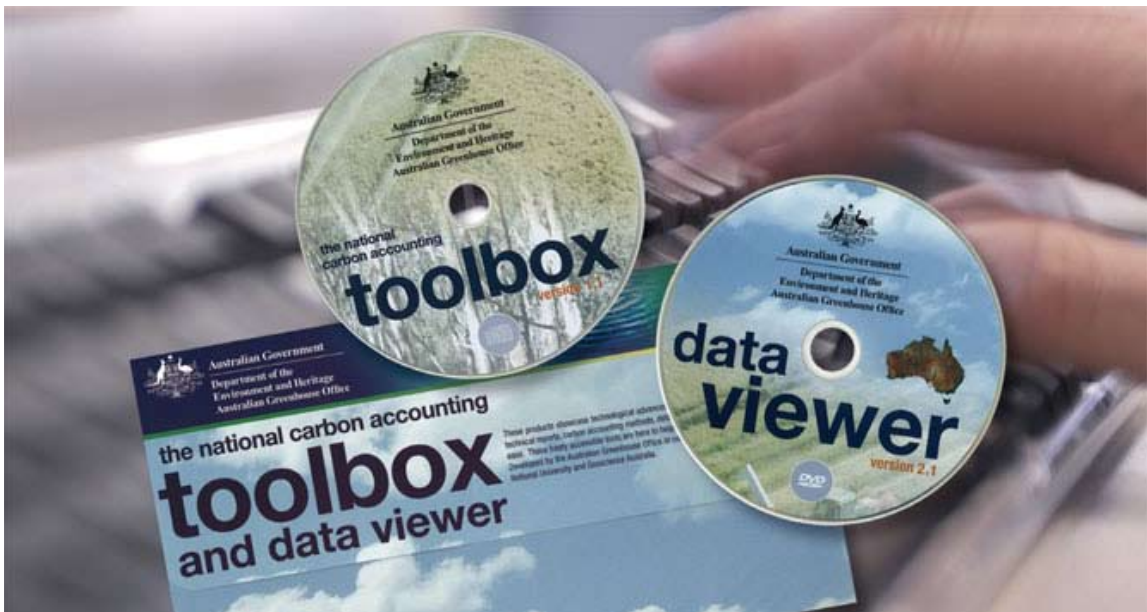
# National Carbon Accounting Toolbox Help Guide - Estate Modelling



**Australian Government**  
**Department of Climate Change**

The National Carbon Accounting System (NCAS) tracks Australia's greenhouse gas sources and sinks from the land. It was developed through extensive collaboration with scientists, policy makers and industry professionals, and combines satellite imagery with models and data to provide a 30-year dynamic account across the continent.

The National Carbon Accounting Toolbox allows users to access the NCAS models and data in order to generate project-level greenhouse gas accounts that are consistent with Australia's national greenhouse accounts.



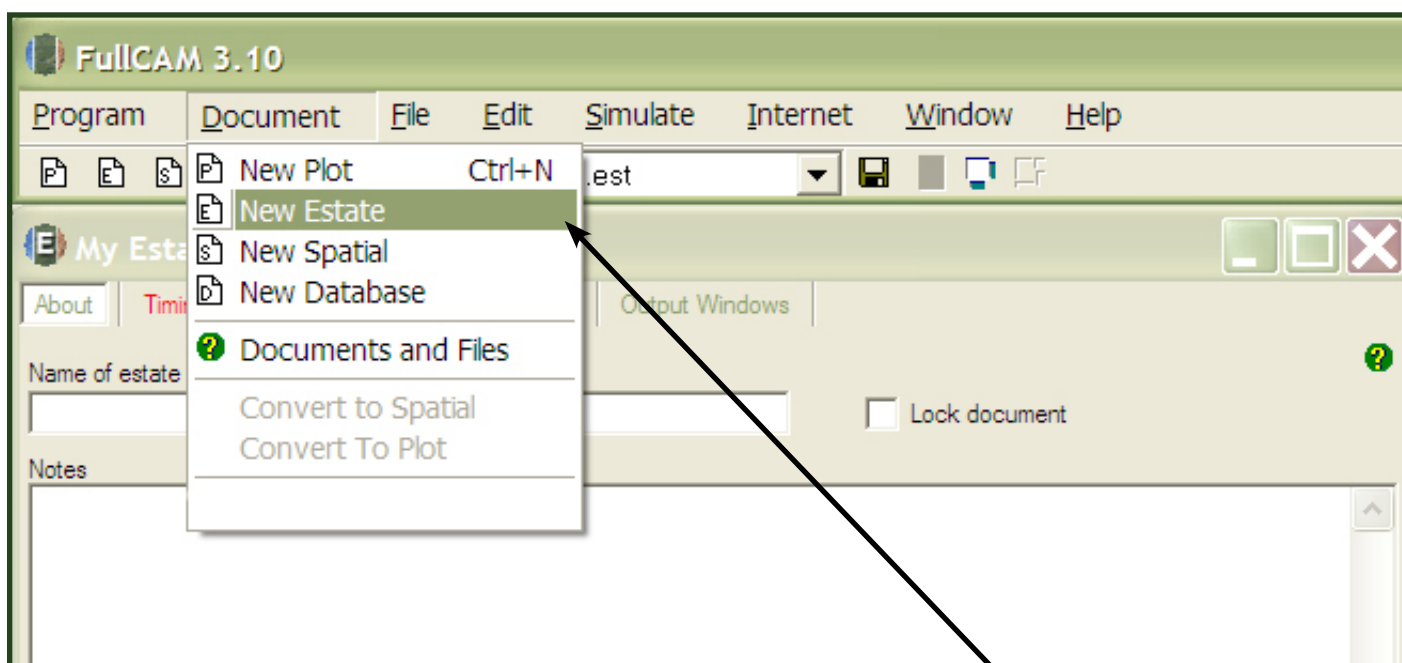
This help guide provides instructions on estate modelling for forest sink projects. A help guide is also available for basic plot modelling (see Page 6 of this guide for links).

The Toolbox allows users to develop a carbon account covering multiple FullCAM plot files developed for forests located on separate sites.

An estate is a collection of plots, each of which has a specified area. An estate file is area based, but not spatially explicit.

Estate files may represent a diverse area of forest with stands (trees) of different ages, types and management systems.

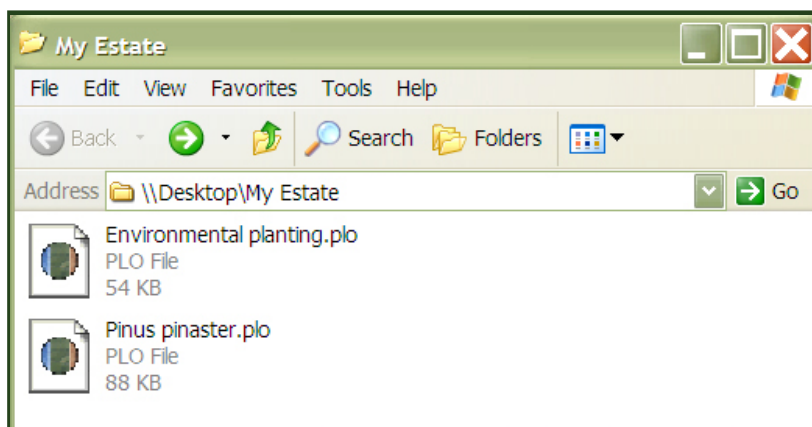
**Note: This Guide assumes that you are comfortable with plot modelling. Refer to the *Help Guide - Basic Plot Modelling* for further assistance on basic plot modelling.**



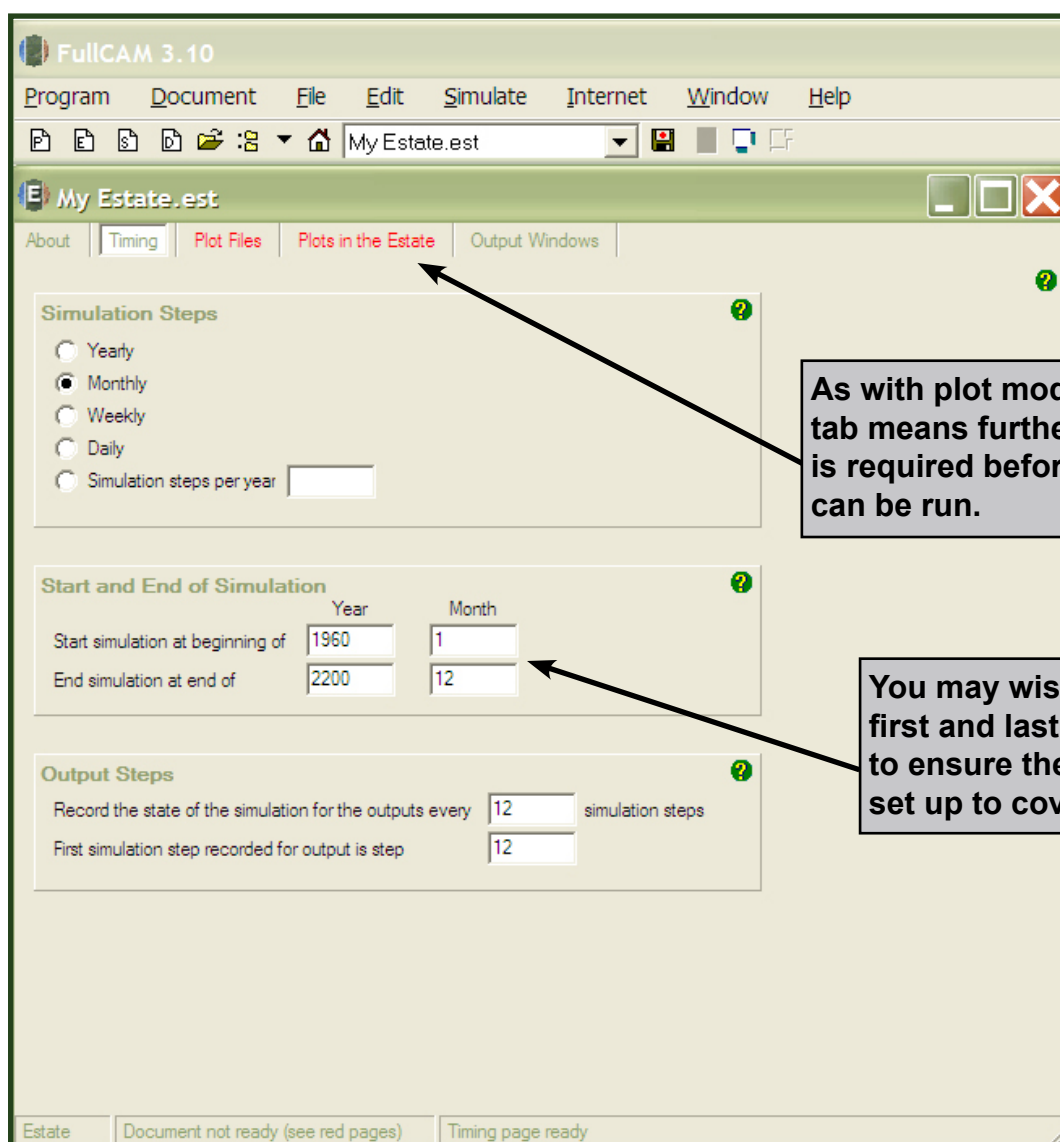
**1. Open a new estate file by selecting *Document > New Estate*.**

There are *two* prerequisites to enable estate modelling:

1) All plot files must be saved in the same folder (directory).



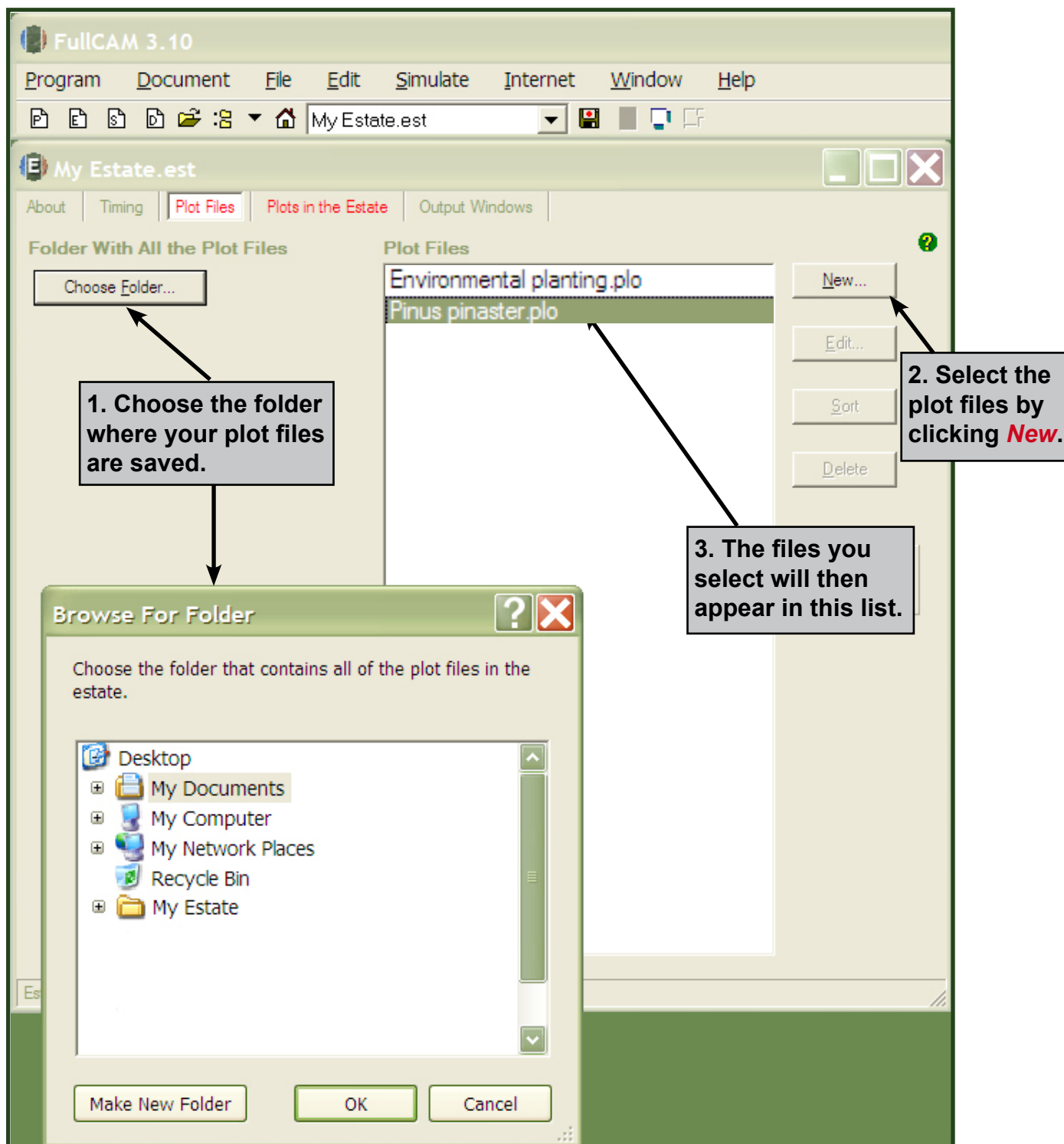
2) The timing of the estate must be set up to cover the whole time period that events within each plot file occurs (unless the plot files are set up using 'time since simulation', see Page 6).



As with plot modelling, a red tab means further information is required before the model can be run.

You may wish to note down the first and last date of your plot files to ensure the estate timing can be set up to cover this period.

The *Plot Files* page allows you to select which plot files to include in the forest estate.



The *Plots in the Estate* page allows you to specify the plots used in the estate modelling. You must also specify the area of each plot used (in hectares), and a starting time.

1. Click **New** to select the plot files to be used in the estate modelling.


2. Enter the start date, ensuring the start date is covered by the estate period identified in the **Timing** page.

3. Start the simulation at Step 1.

4. Enter the area of your forest.

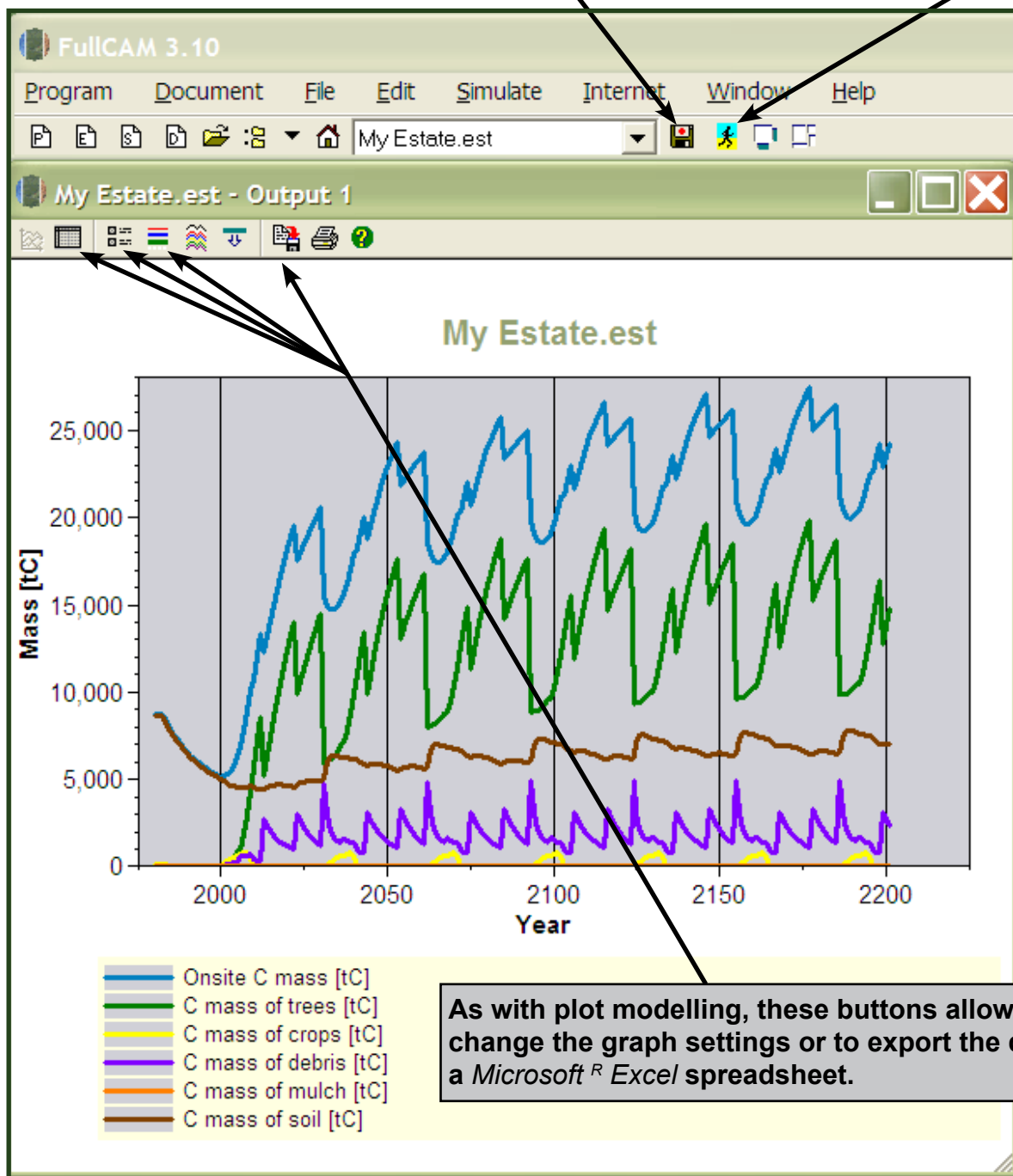
5. Select the plot file to add to the estate. Each plot file must be added separately.

6. Click **OK** to enter settings.

Once all the required plot files are entered, and all the tabs have changed from red, you can run the estate model by clicking the  button. A graph showing the simulated carbon sequestration for the entire estate will automatically appear.

**Saving the estate file will allow you to revisit the estate without needing to enter the plot files again. In addition, if you change a plot file in the list, the estate file will automatically update using the modified plot file.**

**1. Click the 'run' button to run the estate model.**



**As with plot modelling, these buttons allow you to change the graph settings or to export the data to a Microsoft<sup>®</sup> Excel spreadsheet.**

Note that the model outputs the data in tonnes of carbon. To calculate the approximate amount of carbon dioxide sequestered, multiply the data by 3.67 (this is a simple conversion that does not take into account other gases). This calculation can be easily applied to the data after exporting to *Microsoft<sup>®</sup> Excel*.

## More advanced estate modelling

One of the key advantages to estate modelling is the ability to use a single plot file many times in an estate. This is useful if you have created a generic plot file that represents a typical forest management regime, and you wish to estimate total carbon sequestration for forests planted at different times using this regime.

However, to use this technique, your *plot file* needs to be set up using ‘time since simulation’ rather than ‘calendar time’.

Note, this screen represents a plot file and not an estate file.

When using the **Data Builder** to download forest management regimes, the model defaults to ‘calendar time’ for each event. To use the same plot file many times in an estate, you will need to convert each event to ‘time since simulation’.

Year	Day	Step in Year	Name
1982	91	Mar	Plow (clearing)
1982	122	Apr	Plant crop: Agriculture plantation weed species
1982	183	Jun	Grazing -> 85 % of NPP
1991	61	Feb	Grazing -> Off
1991	152	May	Plow (clearing) (2)
1991	183	Jun	Plant crop: Agriculture p
1991	244	Sep	Grazing -> 85 % of NPP
2000	122	Apr	Grazing -> Off (2)
2000	152	May	Plow on 30%
2000	182	Jun	Forest percentage -> det
2000	182	Jun	Forest treatment: +0.5 yr
2000	182	Jun	Forest treatment: +1.0 yr
2000	182	Jun	Plant trees: Pinus radiata
2001	182	Jun	Herbicide on 30%
2003	182	Jun	Forest treatment: +1.0 yr
2005	182	Jun	Thin on 100% (removes
2011	182	Jun	Thin on 100% (removes
2030	182	Jun	Thin (clearing)
2031	182	Jun	Forest fire on 100%
2031	212	Jul	Forest treatment: +0.5 yr
2031	212	Jul	Forest treatment: +1.0 yr
2031	212	Jul	Plant trees: Pinus radiata

1. Double click each event to bring up details about the event.

2. Select the **time since simulation** option.

3. Click **Ok** to enter settings and repeat for each event in the list.

Once *all* events in the events queue of your plot file have been changed to ‘time since simulation’, save the plot file and follow the estate modelling steps starting on Page 1 of this guide. The only difference is now you do not need to ensure that the timing is set up to cover a particular time period (Page 2), as the model will start the simulation from any time period you specify.

When adding plots to the estate (Page 4), you can now specify different starting times for the same plot file to simulate forests that are planted at different times. Each additional forest must still be added as a separate plot in the estate.

# Further Information and Assistance



## National Carbon Accounting System

[www.climatechange.gov.au/ncas](http://www.climatechange.gov.au/ncas)

(includes links to information on FullCAM and the National Carbon Accounting Toolbox)

## Forest Sinks

[www.climatechange.gov.au/nrm/forest-sinks.html](http://www.climatechange.gov.au/nrm/forest-sinks.html)

(includes guidance on planning forest sink projects)

## Email Enquiries

[ncas@climatechange.gov.au](mailto:ncas@climatechange.gov.au)

## Phone Enquiries

**(02) 6159 7191**